

ABSTRACT OF THE DISCLOSURE

Disclosed is a method for etching a silicon nitride film, particularly for silicon nitride films formed over a buffer layer including silicon oxide film during the manufacture of semiconductor devices, that provides a silicon nitride to silicon oxide selectivity of at least about 5 while maintaining an acceptable silicon nitride etch rate. The method utilizes a plasma generated from an etching gas composition that includes CH_2F_2 and may optionally include argon and either CF_4 or O_2 that is applied to a silicon nitride film formed a semiconductor substrate while the substrate is heated to a process temperature of at least about 40 °C.